

DOCUMENT RESUME

ED 429 280

CS 013 532

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 TITLE Integrating Literacy with Music, Art, and Physical Education. Target Action Research 1998-99.  
 PUB DATE 1999-04-22  
 NOTE 18p.  
 PUB TYPE Reports - Research (143)  
 EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.  
 DESCRIPTORS Action Research; Grade 1; High Risk Students; \*Integrated Curriculum; Music; Physical Education; Primary Education; Reading Attitudes; Reading Improvement; \*Reading Skills; Research Needs; \*Student Attitudes; Visual Arts; Writing Attitudes; \*Writing Improvement; \*Writing Skills

ABSTRACT

A study examined whether the integration of literacy with music, visual arts, and physical education significantly improved the reading and writing skills of struggling first grade students. Data included running records, teacher observation, writing samples from portfolios, and student surveys. Results indicated: (1) student attitudes toward reading and writing improved over the course of the study; (2) the reading ability of every student improved, but the overall improvement was less than that of the comparison group; (3) each student demonstrated improvement in writing skills; and (4) students improved in rhythmic, visual, and kinesthetic skills correlated with literacy as their reading and writing improved. Although results were somewhat inconclusive concerning whether or not special areas instruction actually impacted student learning, all of the students did improve their reading and writing over the study period. Thus, the combination of classroom, Reading Recovery, special areas, and other instruction did have a positive effect. In light of this, and since vast amounts of research supports literacy instruction in a variety of settings, this instruction should be continued in all areas. Furthermore, a more controlled type of research would most likely be required to obtain more accurate and conclusive data concerning special areas literacy instruction. (Contains 14 references.) (RS)

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**TARGET Action Research 1998-99***Integrating Literacy with Music, Art, and Physical Education*

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April 22, 1999

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## **TARGET ABSTRACT**

**Research Topic:** Integrating literacy with art, music, and PE.

**Question Researched:** Does the integration of literacy with music, visual arts, and physical education significantly improve the reading and writing skills of struggling first grade students?

**Methods Used to Research:** Running records, teacher observation, writing samples from portfolios, and student surveys.

**Findings in Terms of Effects on Student Learning:** 1) Student attitudes toward reading and writing improved over the course of the study; 2) The reading ability of every student improved, but the overall improvement was less than that of the comparison group; 3) Each student demonstrated improvement in writing skills; and 4) Students improved in rhythmic, visual, and kinesthetic skills correlated with literacy as their reading and writing improved.

**Ways students were involved in the processes of Inquiry and Reflection:** Students participated in teacher-led discussions about literacy at the beginning of the study, sharing why it was easy or difficult, why they believed it was important, etc. They were informed of the purposes of activities and skill practice throughout the study, and they reflected on their reading and writing abilities toward the end of the study, evaluating whether or not the special areas activities aided their literacy improvement.

**Ways to Apply Your Learnings:** Although the results of our study were somewhat inconclusive concerning whether or not special areas instruction actually impacted student learning, all of the students did improve their reading and writing over the study period. Thus, the combination of classroom, Reading Recovery, special areas, and other instruction did have a positive effect. In light of this, and since vast amounts of research supports literacy instruction in a variety of settings, this instruction should be continued in all areas. Furthermore, a more controlled type of research would most likely be required to obtain more accurate and conclusive data concerning special areas literacy instruction.

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**School:** Parkside Elementary

**Date:** April 22, 1999

As literacy continues to be the focus of education in the primary grades, a wealth of research has explored numerous methods of successful instruction for the normal classroom setting. But what role in literacy is available for teachers outside this setting, such as those in music, visual arts, and physical education? Very little has been recorded on this topic, giving the two researchers conducting this study, an art and a PE teacher, the desire to explore methods in which we may impact student literacy.

Our interest in this topic stemmed from a fall workshop detailing the student benefits of literacy and special area integration. Activities teaching skills such as crossing the midline, keeping a steady beat, and continuing patterns usually correlate with the ability to read and write at growing levels (Snyder, 1998). In this case, reading was classified in four levels: Pre-reading, Emergent Reading, Practicing Reading, and Independent Reading. Since students generally move through the levels of reading in that order, then in theory, practicing skills implicit in each level would allow students to become better readers at their current level. This, in turn, should provide a more solid foundation for the higher levels, as students progress toward independent reading.

Aside from the information gained from this workshop, we found nothing else directly discussing our specific topic. Fortunately, as we explored characteristics and programs of primary classrooms experiencing success with reading and writing, we found several that could easily be applied to the special areas as well. One such characteristic entailed teaching reading and writing through tasks that are important to the students. Since students are driven to learn language for its functionality (Strickland & Morrow, 1989), literacy instruction must be attempted in a meaningful context. In other words, students are more motivated to learn when they read and write for a purpose relevant to their interests and to what is happening in their lives.

Another repeatedly stressed characteristic of a literacy supportive classroom is a print rich environment. Such an environment immerses the students in print, covering the walls with relevant posters, charts, and songs; providing a wide variety of books, magazines, and newspapers; offering authentic opportunities to read and write; providing numerous writing tools and choices of paper or notebooks; and making books of student writing, along with many other related tasks and materials (Fisher, 1991). Such an environment, offering opportunities to communicate important meanings through reading and writing, is very supportive of growing literacy knowledge (Neuman & Roskos, 1998).

In addition, students learn best in social settings with a variety of instructional approaches, especially when literacy instruction is integrated into the content areas (Dewey, 1996). In settings supportive of social collaboration, students aid each other in literacy tasks and ultimately accomplish more together than they could have independently (Forman & Cazdene, 1985).

Our study focused specifically on the first graders in our school with the lowest reading and writing abilities. Interestingly, students with poor literacy skills have only recently been offered instructional support on a full-scale. To gain a more complete understanding of the implications of our study, it would be helpful to discuss how such students have been treated throughout the past century.

Historically, students who struggle with reading and writing tasks have been approached from a variety of viewpoints. Believing that the ability to read largely depended on intelligence, some professionals provided little instructional intervention for these struggling students, assuming they could never be literate (Allington, 1991). Once it was discovered that intelligence and reading achievement did not neatly correlate, economic and educational disadvantages were held as the cause of reading difficulties (McGill-Franzen, 1987). A third approach viewed these students as learning disabled, despite the lack of evidence of the neurological difference responsible for this disability (McGill-Franzen, 1987). In all cases, most struggling readers continued to fail, as they were often labeled incapable of being literate, and offered little or no further instruction.

Today we believe that although children vary in the ease with which they learn to read and write, virtually all are capable of acquiring these skills. Viewing even struggling students as potentially successful readers and writers, we communicated this expectation to the students in our study and provided the support necessary for them to achieve this goal. In our investigation, we implemented meaningful literacy activities and direct instruction of critical visual, kinesthetic, and rhythmic skills in our special area classes. Our study focused on this question: Does the integration of literacy with music, visual arts, and physical education significantly improve the reading and writing skills of struggling first grade students?

#### *Relevance of topic*

This study is particularly relevant to the investigation of varying ways to best meet the differing learning needs of our individual students. Since the students targeted in our study are those who were experiencing great difficulty with literacy, it is quite probable that they have different needs than the "traditional" student, whose needs are typically met by current instructional methods. For example, a child may be gifted in kinesthetic areas, using fine motor skills to reconstruct broken appliances and creative engineering thinking to fabricate numerous inventions. But this same child may very well be disinterested and less able in areas of language and analytical skills, which usually means that he will experience a significant amount of difficulty in school, since instruction is traditionally centered around these skills (Healy, 1987).

With the recognition that students possess different styles of thinking and processing information (Healy, 1987), we are then able to attend to their unique needs with a broad range of instructional methods. In our investigation, students who are gifted musically, visually/spatially, or kinesthetically are given the opportunity to focus on their strengths and may then better receive the literary instruction imbedded in the special areas. Through active participation in the special area activities, these students may improve in skills directly related to literacy without any awareness of such a thing taking place. Since students pursue areas that underscore their competence, and avoid those highlighting their weaknesses (Neuman & Roskos, 1998), supporting literacy through subject areas that focus on different types of learning may be an effective avenue toward reaching struggling students.

Specifically, this study meets both goals under "Meeting The Special Needs of All

Students" in our school's PBA Plan of Action. *Goal 1: The needs of Parkside students are met through instructional programs and practices which are supported by current research; and Goal 2: The needs of Parkside students are met through instructional programs which are varied, meaningful, and integrated.*

## Methods

The students selected for this study were the lowest eight readers in the first grade, as identified by participation in the Reading Recovery program. The instructional strategies implemented, however, were used for all of the students in both first grade classes. The students attended one fifty-minute art class, two twenty-five minute music classes, and two twenty-five minute physical education classes each week.

Several skills and concepts related to art correspond with stages leading up to the independent reading level. Students must be read to frequently; recognize the concepts of same-different, whole-part, left-right, top-bottom, and beginning-middle-end; explore shapes and patterns; be exposed to a variety of story structures and sequences; write and draw frequently; make books of their language; and use language in real contexts (Snyder, 1998). In the visual arts class, the students participated in a variety of literacy activities, and practiced preparational skills and activities. These included:

- Composition and illustration of class poems, building upon a common theme. The lines of the poem were rearranged by the students, following a discussion of beginning, middle, and end.
- Creating books with students' writing and illustrations, drawing from their stored knowledge of story structures and sequence.
- Teacher reading from a variety of genres, interspersed with discussions about similarities and differences, and the beginning, middle, and end of the story. The students later had the opportunity to explore these books in pairs with the teacher, reflecting on themes, characters, and devices such as foreshadowing.
- Student titles or explanatory sentences placed on art work, accompanied by a time for students to verbally share their pieces in small groups.
- Creating art work with a variety of shapes, placing the shapes in groups based on perceived similar characteristics. This correlates with spatial formation of letters and is an essential component of print awareness (Snyder, 1998).
- Explicit skill instruction of identifying, creating, and continuing patterns. The students practiced these skills through a pattern game, and demonstrated the creation and continuation of patterns in shape-printing art pieces. This skill helps students find natural patterns in reading and writing.
- Other writing opportunities relevant to the children's lives, such as thank you notes, banners, and holiday cards.

In the physical education class, the students were explicitly taught certain rhythmic and coordination skills necessary to progress to independent reading and writing. Skills correlating with foundational levels of reading and writing include skipping, mirroring,

crossing the midline, marching, keeping a steady beat, aural recognition and construction of patterns, and spatial formation of letters and shapes (Snyder, 1998). The activities in PE included:

- Direct instruction of skipping, which the students then practiced solely as a locomotor skill. Next, skipping was incorporated in games and relay races as a necessary skill for the students' to complete the game or race. Skipping requires students to follow a repeated rhythmic pattern, a skill which is often used in reading (Snyder, 1998).
- Direct instruction of marching, followed by practiced marching with the teacher. Eventually, the students marched as the teacher clapped at various speeds, marched to the beat of rhythm sticks, marched to the beat of music, and marched in patterns with music. Marching requires students to keep a steady beat, which also aids in verbal patterns of reading (Snyder, 1998).
- Mirroring activities requiring the students to cross the midline (some part of the left side of the body crosses the midline to the right side, or vice versa) as they followed the teacher's movements. The ability to cross the midline allows students to read with both eyes across the entire page, instead of starting at the left and ending midway, or starting in the middle and reading only the right hand side (Snyder, 1998). Further midline-crossing activities included clapping with a partner across the midline, movements to a Japanese ribbon dance, and movements to a "Jingle Bell Rock" dance.
- Spatial formation activities, including creating letters with a jump rope, and forming a two letter word with the jump rope as one letter and the student's body as the second. This type of activities helps students approximate letter shapes, which aids writing letters and recognizing letters (Snyder, 1998).
- Other literacy activities, including reading a book and performing corresponding activities involving muscles, maintaining a growing word wall containing common words involved in the class, and students writing what they liked best about particular seasons on corresponding seasonal shapes.

In addition to keeping a steady beat, the aural awareness of patterns, and experience with sound-symbol relationships are vital to reading and writing. In music class, relevant literacy instruction and activities included:

- Direct instruction of keeping a steady beat. Activities corresponding with this skill included clapping with the teacher, clapping with music, patting their knees on beat, and keeping the beat to music on various instruments.
- Exposure to a variety rhythmic patterns. Students were required to reproduce these patterns and sometimes create their own.
- Numerous experiences with sound symbol relationships through the visual symbols representing notes, rests, beats, etc. The ability to mentally link a sound to a symbol is necessary for students to link specific sounds to letters (Snyder, 1998).
- Additional literacy exposure, including reading about various musicians and musical concepts in the text, reading numerous lines from songs, and reading about featured composers or instruments from their language rich environment.

### *Data collection*

A variety of methods were incorporated to collect data, in an attempt to triangulate and thereby attain more accurate results.

*Writing Samples.* Samples of each student's writing were obtained from the classroom teachers. One sample was taken from the beginning of the study (early October), and one from the end (late February/early March). The classroom teachers selected dated samples from student portfolios, representative of each child's writing ability at that point of the year. The two samples from each child were compared in the areas of both process and product.

*Running Records.* Through the Reading Recovery program, of which each student in our study was a participant, the progress of individual student reading performance was obtained. This program divides short texts into levels of difficulty, starting students at the beginning level and promoting them to the next level as they master the one previous. Running records are taken to determine mastery. For each running record, the student independently reads a slightly familiar text to the Reading Recovery instructor, who notes the number of words read correctly, words misread, repeated words, self corrections, inserted words, deleted words, appeals for help with a word, and missed punctuation. The instructor also records words attempted by the student for a misread word, and determines the nature of each word substitution. The number of errors per words in a passage is computed, and the student may move up to the next reading level with a score of 90% or better. A graph is constructed at the end of the midyear, communicating the rate of student improvement (levels progressed through each meeting date). For the purpose of comparison, these graphs were obtained for both the eight students in our study, and the eight Reading Recovery students from another elementary school in our district.

*Student Survey.* Out of interest, the students were surveyed both at the beginning and end of the research period, concerning their attitude toward reading. The surveys were simple, containing four questions:

How do you feel when your teacher reads a story aloud?

How do you feel when someone gives you a book for a present?

How do you feel about reading books for fun at home?

How do you feel when you are asked to read aloud to your teacher?

Each question was proceeded by three response choices: a smiling face, a neither smiling nor frowning face, and a frowning face. The students circled the face that most accurately represented how they felt.

*Observations.* During the length of the study, the students were observed by all three special area teachers in the areas of attitudes toward reading and writing, ability level of skills necessary for independent reading and writing, and actual reading and writing performance. Skills observed included keeping a steady beat, copying rhythms, creating and continuing a pattern, marching, crossing the midline, skipping, approximating shapes of letters, and mirroring.

### **Results**

As we analyzed the data toward the end of our research period, several themes emerged.

*Theme 1: Student attitudes toward reading and writing were generally positive from the start, and slightly improved over the course of the study.*

Six of the eight students were available for the survey taken at the beginning of the study. This survey reported an overall considerably positive attitude toward reading. We converted the pictorial responses to numerical values for the purpose of comparison, with the smiling face being a 3, the neutral face a 2, and the frowning face a 1. Thus, the overall response could range from a mean score of 1.00 (representing a the most negative response) to 3.00 (representing the most positive response).

The students responded positively toward their classroom teachers reading stories aloud. The mean score for this first question was 2.83. All the students felt positively about receiving a book for a present, as the mean score for this question was 3.00. Concerning reading books for fun at home, the result was slightly positive, with a mean score of 2.17. When asked to read aloud to their classroom teacher, students felt quite positive again, with a 2.83 mean score.

All but one student responded to the survey with at least three (out of four) positive responses. The one exception responded with one smiling face, one frowning face, and two neutral faces, resulting in an average neutral survey score of 2.00. Thus, the students participating in this study entered the research period with an overall positive attitude toward reading.

At the end of study, the students were again surveyed with the same four questions and the same three possible responses. This time, all eight surveys were obtained. Three of the questions received a more positive response overall; the remaining question was slightly less positive. In general, however, the students' attitudes toward reading improved.

The first question, concerning feelings about classroom teachers reading stories aloud, received a more positive response (mean score of 3.00 versus the previous score of 2.83). Students also felt more positively toward reading books for fun at home (mean score of 2.75 vs. 2.17). Their attitude toward reading aloud to their classroom teachers improved as well (mean score of 2.88 vs. 2.83). The one area eliciting a slightly less positive response concerned feelings about receiving a book for a present. This question had a mean score of 2.88 (vs. 3.00), meaning that one student circled a neutral face, while the rest circled smiling faces. It may be of interest to note that the student with the neutral response was one of the six who responded to the first survey with a positive response. Nonetheless, computing the average of all the responses on the surveys, we notice a .17 overall increase, with the ending survey reporting a mean of 2.88, compared to that of the initial survey, 2.71.

In addition to the survey results, observations taken by the teachers also indicated a positive student attitude toward reading and writing, along with a slight improvement in attitude over the course of the study. As a part of initiating the study, a discussion concerning literacy took place in the physical education class, in which many of the students (including the ones targeted in our study) expressed their belief that reading was fun. In the visual arts

class, the students discussed the components of reading and writing that make them easy or difficult. One of the students pointed out that a book with "too many words you don't know" makes reading difficult, but all appeared to agree that it was fun, even if it wasn't always easy. When reading from the text in art class, the eight students targeted by this study were just as likely (and sometimes more likely) than their peers to volunteer to read a section. After being selected to read, however, they often relied on their peers to supply unknown words. The targeted students were also eager to volunteer answers to comprehension questions concerning information given in the text, and were usually accurate in their responses.

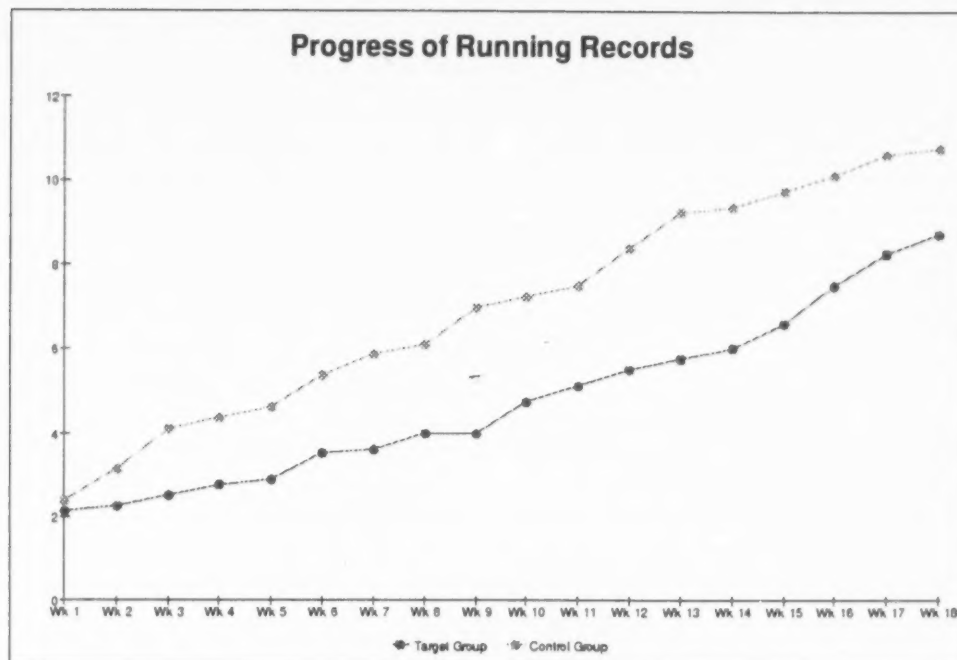
In the area of writing, however, about half of the targeted students were more hesitant than their peers to attempt unknown words at the beginning of the research period. In art class, these students were a little more likely to ask for teacher help in spelling words correctly. (In most cases, the teacher worked together with the student in hearing the sounds of the word, and writing the letters that best fit those sounds.) Toward the end of the study, most of the targeted students were attempting new words without hesitation, and were eager to read their sentences or titles to the teacher and their peers. One student in particular, however, still expressed great disinterest in writing at the end of the research period. After being reminded that part of the instructions included writing an explanatory sentence on the art work, he commented, "But I don't want to write, it'll ruin my picture. Do I have to?" The rest of the students, however, wrote without complaint and were proud enough of their work to share it with others.

*Theme 2: The reading ability of every student improved, but the overall improvement was less than that of the comparison group.*

Throughout the course of the study, every student displayed progress in his or her reading ability. The running records taken through the Reading Recovery program report that every student mastered anywhere between two and ten successive reading levels during the period of our research. The average gain (mean) was 6.63 levels, while the gain of the middle scoring student (median) was 8 levels.

From teacher observation, the students all read with at least slightly more fluency during class, were more likely to attempt unknown words before asking for help, and possessed larger sight-word vocabularies. One student, who mastered 6 reading levels during the study, eagerly selected books to read to the art teacher, including a few books containing text with which she was not familiar. With one of the unfamiliar books, she used picture cues, initial consonants, and meaning from surrounding text to decipher new words. She paused only twice to ask for a word supplied by the teacher. The student expressed disappointment when time ran out, and she was unable to read the few remaining books to the teacher.

Despite obvious gains in the reading ability of the eight targeted students, these gains were smaller than those experienced by the comparison group, composed of eight Reading Recovery students at another school within the district. According to their running records, the students of the comparison group gained mastery over anywhere between three and fourteen successive reading levels during the research period. On average, they gained 8 levels (mean), with a middle score of 10 levels (median).



The comparison group was selected because they shared important characteristics with those of the test group: they were in the same school district, were in first grade, were identified as low readers, and were participating in Reading Recovery. The difference under examination was that this group was not receiving the literacy (and related skills) instruction in their special area classrooms. Thus, in theory, the results of their reading gains compared to that of our students should indicate whether this instruction significantly improved student literacy, beyond the gains that would normally occur over time due to experience with reading and writing in the normal classroom, practice at home, and instruction in Reading Recovery.

Since the comparison group was not a control group, the implications of the scores are not neatly defined. Numerous factors with the potential to significantly impact gains in reading performance were not within our control. Such factors include socioeconomic background, amount and type of literacy scaffolding offered in the different first grade classrooms, varying approaches of instruction among different teachers in the Reading Recovery program, mental and physiological factors that may inhibit the rate of a child's learning, and additional experience with print (outside of the school setting). If it were possible to control such factors, the information gained from the running records would be more decisive. As it is, we can only safely conclude that while the targeted students did improve in reading ability, students without literacy instruction integrated into the special areas also exhibited significant improvement.

*Theme 3: Each student in the target group demonstrated improvement in writing skills.*

As samples of student writing obtained from the beginning and end of the study were compared, a considerable amount of improvement was immediately evident. Even at a first glance, the later pieces were longer, contained a deeper development of ideas, attempted words of greater difficulty, and possessed a higher rate of accurate spelling. For the purpose of obtaining more quantitative measures of student improvement, the samples were assessed in two manners.

First, the writing samples were holistically scored. This type of scoring evaluates the student's overall ability to communicate ideas to a specified audience, with the written compositions graded according to a specific evaluation guide (Barr, Blachowicz, & Wogman-Sadow, 1995). The guide utilized in this study included both traditional measures of grammar and mechanics, as well as measures of process and development. The inclusion of these additional measures follow the suggestion of recent studies in writing assessment, which have affirmed writing as both a product and a strategic process (Barr, Blachowicz, & Wogman-Sadow, 1995).

The Holistic Scoring Scale created by the NCTE was the assessment guide used in this study. Eight components were evaluated; four were concerned with mechanics and related areas, including grammar/sentence structure, punctuation, spelling, and manuscript form/legibility. The remaining four dealt with strategies of the writing process, rating organization, style, phrasing, and development of ideas. Each component was given a score ranging from 1 (poor) to 5 (excellent). The process components were weighted above mechanics as the scores were converted to a total writing grade, reported as a percentage (0-100% possible range).

The grades given to the initial writing samples ranged from 23% to 62%, with an average (mean) score of 47%. These grades indicate a significant lack of mastery over the skills and process strategies vital to writing. By the end of the research period, the student samples demonstrated growth in virtually all the components measured, with grades ranging from 64% to 87%. The average (mean) score of the later samples was 76.9%, an increase of 29.9% from those obtained at the beginning of the study. While this overall score does not necessarily represent complete mastery of the skills and strategies necessary for writing, it at least indicates significant literacy improvement and an approaching level of mastery.

The second manner of assessing the written samples evaluated spelling to determine each student's current stage of literacy. Spelling often serves as a strong indicator of a student's internalization of the regularities contained in the sound-symbol system (Barr, Blachowicz, & Wogman-Sadow, 1995). Ferroli and Shanahan (1987) identified six stages of spelling through which students progress in a fairly predictable manner. These stages are, in the order which they normally occur: preliterate, initial consonant, consonant frame, phonetic, transitional, and correct spelling. Since the students' progress and movement between the stages vary in unique ways, it would be best to discuss them separately.

Student A's initial piece contained correct spelling of her sight words (words she knew on sight), but preliterate spelling of unfamiliar words. To spell the word *Halloween*, she used the letters *isw*. Her ending piece, however, contained correct sight words, and unfamiliar words with phonetic/transitional spelling. *Cookie* was represented as both *cooky* and *cokey*, and *too* as *to*. Thus, when dealing with words she did not know how to spell, she

progressed three to four stages in her attempts.

Student B similarly spelled his sight words correctly in his first sample, but represented unfamiliar words with a consonant frame (*farm* as *frm*). His lengthy ending piece contained correct sight words, and this time included vowels in the words he did not know, placing him in the phonetic and transitional spelling stages. For example, he represented *friends* as *frens*, *great* as *grat*, and *millions* as *milleeins*. (While most of these spellings are phonetic, the double *l* in *millions* indicates transitional spelling as well.) Student B progressed one to two stages.

Student C began with correct sight words and phonetically spelled unknown words (*with* as *wath*). His final piece contained transitional (and one correct) spelling of unknown words (*rolling* as *rulling*). One word in his writing sample provided a measure of insight into his cognitive spelling process. He first began with his cat's name spelled *Tabbe*, then crossed out the *e* and substituted a *u* above it (*Tabbu*), then finally crossed out the *u* and substituted a *y* for the correct spelling of *Tabby*. His spelling also progressed one to two stages.

Student D's initial piece consisted of correctly spelled sight words and phonetically spelled unfamiliar words, such as *wood* for *would*, and *fewr* in place of *for*. The final piece contained all correctly spelled words, with self corrected words *love* and *my*. This student's spelling progressed two levels.

Student E did not complete her first piece, which read only "If I 8". This makes it rather invalid for spelling analyzation, but it should be noted that she had the same amount of time to complete her sample as did the other students, and the beginning words "If I had a purple pebble..." were even available for her to copy. Her final sample contained all correctly spelled words, with five words self-corrected. One of these was the word *hair*, which began as *hare*, and was corrected to the traditional spelling.

Student F presents an interesting case. Her first writing sample contains all correctly spelled words, but she did not attempt any unfamiliar words. Again, this leaves us with no insight into her methods of attempted spelling for new words. Her final piece, however, reveals a willingness to take risks with unknown words, which she spells transitionally (*frined* for *friend*, and *nic* for *nice*).

Student G, like Student E, did not complete his initial writing sample, which read only, "IF Pebble Purple". Again, this child had the same length of writing time as the others, and also had the beginning of the sentence available to copy. The ending sample revealed phonetic spelling of unfamiliar words. These spellings included *sckool* for *school*, and *wes* for *was*.

The final child, Student H, correctly spelled her sight words in the initial piece, and correctly spelled an unfamiliar word, *marble*. The unknown words at the end of her sentence, however, were represented with meaningless combinations of letters, scribbles, and swirling lines, indicative of preliterate spelling. Her final piece does not contain any scribbles or meaningless lines; unknown words are represented by a consonant frame with a few vowels, placing her between the consonant frame and phonetic stages.

*Theme 4: Student ability in visual/spatial, kinesthetic, and rhythmic skills related to literacy generally correlated with reading and writing ability. The students improved in activities*

*involving these skills throughout the study (as their reading and writing improved).*

Dealing with the ability to identify, create, and continue a pattern, all of the students targeted in this study had performed more poorly than the majority of their classmates at the beginning of the study. However, some of the other students in the class also performed just as poorly. At the end of the research period, all but one of the students could continue a pattern, and most could create and continue their own patterns. While they occasionally missed an item in a pattern, their ability matched that of the majority of their peers. The one student who still struggled with this skill did not seem aware of it. After proudly showing the teacher her "pattern," she was asked if it repeated. The student responded, "Well, I don't know...maybe. Let me read you my pattern: circle, dots, square, y, more dots, r..."

At the beginning of the study, all but one student could skip, although the students targeted in our study were generally weaker in this skill than their peers. The class worked to perfect it through a variety of activities, and by the end of the study, all of the students could skip with moderate ease.

Marching was a little more difficult to observe. At the beginning, the majority of the classes (including the students who with average and high reading/writing abilities) could not march to a steady beat. At the conclusion of the study, all but one of the children could usually march on beat. Only one of the children targeted in our study was not even close to keeping a beat.

In midline activities, most of the students could follow the motions, although about a third were a step behind when mirroring. Since the ability to cross the midline is somewhat of an all or nothing skill, and because all of the students began with the ability to cross the midline of their bodies, improvement could not be assessed.

From the beginning of the research period, all of the students approximated shapes (including letter shapes) with moderate skill. When forming letters with jump ropes, several of the targeted students had difficulty placing their two letters in the right order on the floor (to form a two letter word) for someone to read. In general, however, all of the students already possessed moderate ability in spatial formation, making it difficult to observe much progress over the duration of the study.

It is necessary to note that the student who could not create and continue a pattern, and the student who could not keep a beat were different students. Additionally, the students who had the lowest ability in these skill areas fell into the range of the three lowest running record scores.

### *Inquiry and Reflection*

This study included a metacognitive component, as we encouraged our students to think about and eventually evaluate their learning. In art and PE, the students discussed what made reading and writing easy or difficult, what was fun about it, and why it is important. The students were told that they would be practicing skills and participating in reading and writing activities that may help them become better readers and writers. When different skills were introduced throughout the beginning of the study, the students were reminded that these

may improve their reading. At the end of the study, about half of the children remembered why they were practicing those skills and activities, and every single one of them believed that he or she had become a better reader. When asked if they believed that marching, keeping a steady beat, etc. had helped them with reading and writing, approximately half of the students said they didn't know, and about 20% concluded that since they now read better, the skill instruction must have helped. The rest had no response, and none reported that the skills and activities did not help.

## **Discussion**

Although numerous studies have suggested various methods of successful literacy instruction, almost all practical applications pertain to the normal classroom setting. Very little has been said about the role special area subjects may play in producing successful readers and writers. In this study, several classroom methods were carried over to the special area classrooms, including creating a print-rich environment, immersing the subject areas in print, providing occasional help with explicit segmentation of words, creating purposeful and relevant opportunities for reading and writing, and integrating instruction using a variety of settings and approaches. Group work and whole-class activities increased productivity by allowing the children to learn from each other, as social settings provided opportunities for students to explain things to one another and arrive at "joint understandings" (Johnson & Johnson 1987).

Several skills directly related to the special areas were also explicitly taught and practiced in different contexts, including midline activities, rhythmic and visual patterns, steady beat activities, and concepts of whole-part, top-bottom, and beginning-middle-end.

Focusing our study on eight low readers in the first grade, we discovered that even these students viewed reading in a positive light from the beginning of the study. Their attitude improved slightly over the course of the research period, with an end result of a highly positive approach to reading activities (Theme 1). A possible correlation may be drawn between student improvement in literacy and an increase in positive regard toward literacy. As explained by Morrow and Gambrel, children are motivated to learn when activities are challenging but allow at least perceived success (1998).

The reading and writing skills of the students also experienced moderate improvement throughout the study (Themes 2 and 3). Teacher observations, writing samples, and running records all indicated a significant increase in literacy performance. As Theme 4 discussed, as their reading and writing improved, students also improved their rhythmic, visual, and kinesthetic skills related to the ability to read and write.

## *Concerns/Limitations*

This study had several critical limitations. The impossibility of using a control group limited the ability to draw conclusive evidence concerning running records. While the group we used was a comparison group, meaning they had as many similar characteristics as we could possibly find, numerous factors with the potential to significantly impact student literacy

were not controlled. If students with identical socioeconomic backgrounds, previous experience with print, physiological make-up, intelligence, and type of Reading Recovery and classroom instruction were available for use as a control group, we would have obtained a more accurate comparison of reading improvement. Any of these factors may have had a more profound impact on reading ability than the two and a half hours of weekly special area instruction, rendering the validity of this comparison very poor.

Furthermore, although student reading and writing did demonstrate significant growth over the period of the study, it is impossible to determine how much, if any, of the improvement can be attributed to the special area activities. It seems fairly obvious that with classroom instruction, individualized Reading Recovery instruction, possible parental help at home, and increased exposure to print over time, students would most likely improve in their literacy skills. The purpose of the comparison group, then, was to provide us with an idea of the amount of improvement that would happen "naturally," without special area literacy instruction. This amount was intended for comparison with the improvement of our target group, who had the benefit of the added literacy instruction in the special areas. As the comparison stands, it may appear that the added literacy instruction worked against the students, limiting their literacy improvement. Again, much to the relief of our consciences, the validity of the conclusion drawn from this assessment is very low, and a wealth of research points against the probability of authentic literacy tasks detracting from student improvement.

## **Conclusions**

While it has been determined that struggling students are capable of improving their reading and writing skills, the specific cause of their improvement remains uncertain. We do know that the combination of instruction and experience received by our target group resulted in positive gains in both ability and attitudes toward reading. It is just as clear, however, as demonstrated by our comparison group, that significant improvement in reading can take place without the added support of literacy instruction in the special areas.

Since a vast quantity of research supports print-rich environments and the functional use of literacy in a variety of subject areas (Strickland & Morrow, 1989), continuing the integration of literacy activities in the special areas may still be a practical application of this study. In fact, it is quite possible that dramatic gains related to special area instruction were not evident because of the relatively minute amount of time spent in these classes, in addition to the necessary time spent on special area instruction that did not directly relate to literacy.

A more imperative application of this study is to continue to implement and improve literacy-rich experiences in the classroom, Reading Recovery setting, and even the home environment. While a single cause is not evident, it is clear that the literacy support from a variety of sources allowed our target group to experience significant growth. Neuman and Roskos' observation concerning their study of struggling readers applies to our study as well: "In collecting these data, we will get multiple answers to our questions...a single instructional solution will not emerge" (1998). By employing a wide range of instructional approaches, including those involving the special areas, we may best ensure that the specific and differing

needs of each child is met.

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